

Remarks/Arguments

Claims 1-62 are pending in this application. During a telephone conference with the Examiner on September 12, 2003, a provisional election was made, with traverse, to prosecute the invention of Group I, claims 1-30. This provisional election is hereby affirmed. Accordingly, claims 31-62 are cancelled, without prejudice.

Claims 8 and 10 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite due to the recitation of trademarks and/or trade names. Claim 8 has been cancelled, without prejudice. Claim 10 has been amended to delete the previously-recited trademarks and/or trade names. Accordingly, the rejections under 35 U.S.C. § 112, second paragraph, have been overcome.

Claims 1, 5, 6, 14-16, 20 and 26-28 were rejected under U.S.C. § 103(a) as allegedly unpatentable over U.S. Patent No. 6,159,354 (“Contolini”) in view of U.S. Patent No. 6,517,689 (“Hongo”). Claims 2, 21, 22, 29 and 30 were rejected under U.S.C. § 103(a) as allegedly unpatentable over Contolini in view of Hongo, U.S. Patent No. 6,261,433 (“Landau”) and U.S. Patent No. 6,267,860 (“Brodsky”). Claims 7, 8, 9 and 23-25 were rejected under U.S.C. § 103(a) as allegedly unpatentable over Contolini in view of Hongo and U.S. Patent No. 6,627,052 (“Fluegel”). Claims 9-13 and 17-19 were rejected under U.S.C. § 103(a) as allegedly unpatentable over Contolini in view of Hongo, Fluegel, Landau and U.S. Patent No. 5,853,559 (“Tamaki”). These rejections are traversed for reasons including those set forth below.

The Office Action noted that claims 3 and 4 were objected to as being dependent from a rejected base claim, but would be allowable if rewritten in independent form.

Claim 1 has been amended to more clearly distinguish the art relied upon in the Office Action. It is respectfully submitted that claims 1-30 are allowable for reasons including those stated below.

Response to Rejections of Claims 1-30 Under 35 U.S.C. § 103

Independent claim 1 has been amended to recite:

1. (Currently Amended) An apparatus for engaging a work piece during an electrolytic process, the apparatus comprising:

a cup having an interior region and a lip within the interior region arranged such that the lip can support the work piece while the work piece remains within the interior region;

a first plurality of electrical contacts arranged about the lip for providing electrical current to the work piece via a metal layer thereon;

a second plurality of electrical contacts, which do not include electrical contacts from the first plurality of electrical contacts, arranged about the lip for measuring electrical resistance through the metal layer on the work piece; and

a cone having a work piece contact surface that fits within the cup's interior and can contact the work piece in a manner that holds the work piece in a fixed position between the work piece contact surface and the lip;

wherein a first circuit contains the first plurality of electrical contacts and a second circuit, isolated from the first circuit, contains the second plurality of electrical contacts.

This amendment is supported, for example, by page 12, lines 3-8 of the present application:

Electrical contacts 144, for checking continuity of the seed layer via resistance measurements, are not electrically connected to shunt bar 155.

Electrical contacts 144 do not have associated in-line resistors. Electrical contacts 144 are part of a circuit that is separate from the circuit or circuits used to deliver plating current to the electrical contacts 143, as will be discussed in more detail in association with subsequent figures.

The Office Action admits that the apparatus of claim 1 differs from that disclosed in Contolini. (Id. at ¶ 11.) The Office Action goes on to state the following regarding Hongo:

Hongo et al disclose a switching arrangement allowing the contacts to be selectively connected to either the electroplating power supply or to a resistance measuring circuit. See figure 10 and column 6, lines 5-34). The switches may be operated to connect a first plurality of the contacts to the electroplating power supply and a second plurality of contacts to resistance measuring circuits.

(Id.)

The apparatus recited in claim 1 differs from that disclosed in Hongo, as understood. One of the consequences of this difference may be seen, for example, in the following description:

Prior to filling the plating vessel 101 (refer to FIG. 1) with the plating solution, the contact resistance measuring apparatus is operated to move the switches S₁-S₄ to contact point c, so that a constant current flows between each constant current circuit 32 in the contact resistance measuring circuits . . .

* * *

When there is no improper contact in any of the feeding contacts 15, i.e., all conduction states are indicated to be proper, switches S₁-S₄ are switched back to terminal "a", and the plating vessel 10 is filled with the plating solution. Then the plating current is allowed to flow from the plating feeding device shown in FIG. 12.

(Hongo at col. 6, lines 35-39 and 59-64.)

Hongo (as understood) does not teach using both the plating circuits and resistance-measuring circuits during a plating sequence.

In contrast, claim 1 recites independent plating circuits and resistance-measuring circuits:

a first plurality of electrical contacts arranged about the lip for providing electrical current to the work piece via a metal layer thereon;

a second plurality of electrical contacts, which do not include electrical contacts from the first plurality of electrical contacts, arranged about the lip for measuring electrical resistance through the metal layer on the work piece;

Claim 1 further recites that “a first circuit contains the first plurality of electrical contacts and a second circuit, isolated from the first circuit, contains the second plurality of electrical contacts.”

The independent plating circuits and resistance measuring circuits recited in claim 1 allow resistance to be measured during a plating sequence. (See, e.g., specification at p. 13, line 9.)

It is respectfully submitted that the independent plating circuits and resistance measuring circuits recited in claim 1 differ from the “switching arrangement allowing the contacts to be selectively connected to either the electroplating power supply or to a resistance measuring circuit” disclosed in Hongo. Therefore, even if one of skill in the art were motivated to combine the teachings of Contolini and Hongo (which has not been established), the resulting combination would still be patentably distinct from the apparatus recited in claim 1.

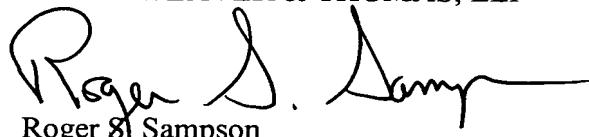
For at least the foregoing reasons, it is respectfully submitted that claim 1 is patentably distinct from the teachings of Contolini and Hongo. Claims 2-30 are therefore patentable as being dependent from patentable claim 1.

Conclusion

In view of the foregoing, it is believed that the rejections of claims 1-30 have been overcome and are allowable over the art relied upon. Accordingly, an early notification that the application is in condition for allowance is earnestly solicited.

Respectfully submitted,

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